



Hospital Clínic Barcelona

Power Up Lab Performance
with Siemens Healthineers
Total Lab Solutions.

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Case
Study



Overview

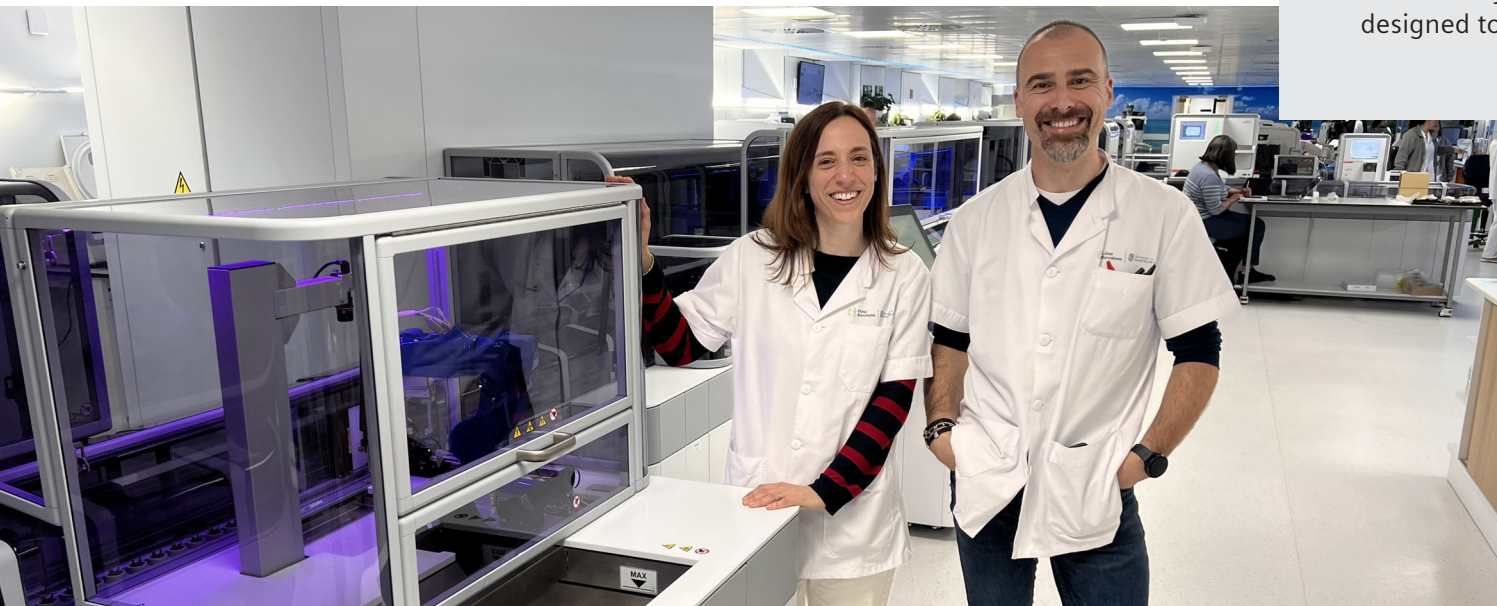
- Hospital Clínic Barcelona is a tertiary-level hospital serving more than 600,000 inhabitants with 1,027 beds across three sites. The lab processes 5,000-6,000 tubes per day with a peak of 1,275 tubes at 10 am.
- Hospital Clínic Barcelona has a proven record of implementing the latest innovation in the market since 2001.
- Hospital Clínic Barcelona laboratory placed second in the Monitor Reputation award for two consecutive years, a prestigious ranking chosen by professionals nationwide.¹

Laboratory goals

- Aim to meet the hospital's evolving needs through innovative approaches that ensure high-quality, patient-centered care;
- Implement strategic optimization solutions to manage increasing test volumes, workforce limitations, and administrative complexity;
- Implement purposeful automation that enhances staff satisfaction and improves the efficacy of patient care.

Success factors

- The lab fostered a culture of continuous innovation by involving technicians and daily users early in the planning process, enabling smoother adoption and delivering measurable improvements in operational efficiency.
- Even in a highly automated environment, the lab's ongoing culture of treating every sample with the patient in mind continued to reinforce its commitment to compassionate, high-quality care.
- Enable resiliency and transformation through strategic planning and trusted partnership. With Siemens Healthineers as a long-term collaborator, the lab has successfully navigated evolving demands by implementing future-ready solutions designed to adapt and endure.



1. Hospital services: ranking by specialty. Merco. Available from: <https://www.merco.info/es/monitor-reputacion-sanitaria-servicios-hospitalarios> [accessed 13 Jun 2025]

The human-centric laboratory.

Imagine a typical day in the lab before modern technologies were introduced. Lab technicians were overwhelmed with manual tasks, high noise levels, and physical strain from long hours on their feet, increasing the chances of inaccurate testing and loss of samples. The environment is stressful and the workload is relentless.

In the fast-paced environment of the laboratory, healthcare professionals are under constant pressure to do more—handle more patients, run more samples, train more staff, and make more crucial decisions. This relentless pace can lead to inefficiencies and burnout of lab technicians. However, by embracing the principles of human-centric design, sustainable practices, and advanced workforce solutions, Hospital Clínic Barcelona has continuously evolved its operations to achieve more by doing less. Whether easing staff workload, achieving sustainable lab operations, or supercharging productivity, the seamless adaptability of the Atellica Portfolio can enable the lab to achieve its goals.



Innovation without limits. Progress without pause.

Sustainable improvements in the lab begins with a clear strategic vision. When paired with the right partner, this vision can significantly enhance the experiences of lab technicians and patients. The pioneering journey started in 2001 when Hospital Clínic Barcelona was among the first healthcare providers in the world to create an automated core laboratory with the ADVIA LabCell Automation Solution from Siemens Healthineers connected to 10 analyzers. In 2014, the configuration was streamlined even further with Aptio Automation connecting 16 analyzers. In 2017, the Atellica Solution was introduced.



“Innovation requires bravery, not recklessness.

We dedicated four months to planning the transition from the previous 2017 configuration, and the results were worth it. During our innovation upgrade, the lab avoided downtime while maintaining testing quality and response times. Effective planning and execution contributed to a low-stress lab environment during the transition period.”

– Dr. J.L. Bedini

In 2024, the lab introduced cutting edge technology, including Atellica Solution, Atellica Data Manager, Atellica Task Targeted Automation, CN-6000 System, and FlexLab X.



Atellica Solution



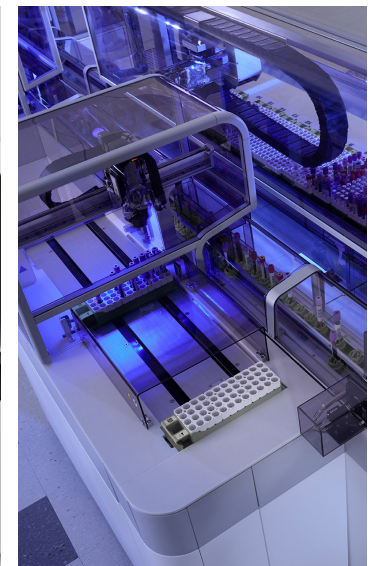
Atellica Data Manager



Atellica Task Targeted Automation



CN-6000 System



FlexLab X

Hospital Clínic Barcelona achieved measurable gains in efficiency and responsiveness for inpatient samples, with STAT turnaround time from sample draw to reportable result improving by 4.2 minutes—from 54.3 to 50.1 minutes—representing an 8% improvement within the 90th percentile.

For outpatient samples, average TAT was reduced by 26 minutes for glucose and 18 minutes for red blood cells (RBC), while 90th percentile TAT dropped by 50 minutes for glucose and 35 minutes for RBC. In day hospital settings, average TAT improved by 23 minutes for glucose and 12 minutes for RBC, with 90th percentile TAT reductions of 43 minutes and 19 minutes, respectively.



A 37.5% increase in storage capacity—from two storage units with a capacity of 9,216 tubes each to two units with a capacity of 12,672 tubes each—enabled the lab to handle rising volume demands more effectively, showcasing how the Atellica Portfolio supports leaner, faster operations with reduced burden on staff.²

The integration of Atellica Task Targeted Automation, FlexLab X, and Atellica Solution streamlined operations during peak hours by incorporating efficiencies from the pre-analytical, analytical, and post-analytical phases. The thoughtful approach to implementing interoperable solutions has enabled Hospital Clínic Barcelona to expand testing by more 30% between 2019 and 2024, reaching 7.7 million tests in 2024.

Despite this growth, the number of full-time equivalents (FTEs) has remained unchanged, with no plans to expand the workforce even as demand continues to rise.

Through continuous evolution and the adoption of one-touch tube workflow, the lab has saved between 10 to 11 million sample tubes over the past 24 years, highlighting its commitment to smarter, more sustainable laboratory practices.

>30% 
Tests 

8% 
STAT 

10-11 M 
Tubes Saved 

2. IMPLEMENTATION OF THE NEW AUTOMATION SYSTEM. N. Rico¹, Á. Molina¹, R. Muñoz¹, C. López³, H. Castilla¹, C. Rodríguez², A. Sánchez², C. Domingo¹, J.L. Bedini¹



“The Atellica Data Manager can automate almost any laboratory workflow.

We appreciate that the Atellica Data Manager empowers our team to adapt workflows independently without relying on technical support. It’s user friendly and enables the lab to operate efficiently. It ticks all the boxes.”

– Dr. Á. Molina



**Running leaner.
Responding faster.**

Enterprise intelligence is at the core of the lab’s operations. With Atellica Data Manager, customizable dashboards and counters give staff real-time visibility into key metrics, enabling smarter prioritization and faster decision-making. Its flexible, user-driven dashboard empowers teams to independently adapt workflows, streamlining operations while maintaining consistency across the laboratory.

Resilient by design. Agile by choice.

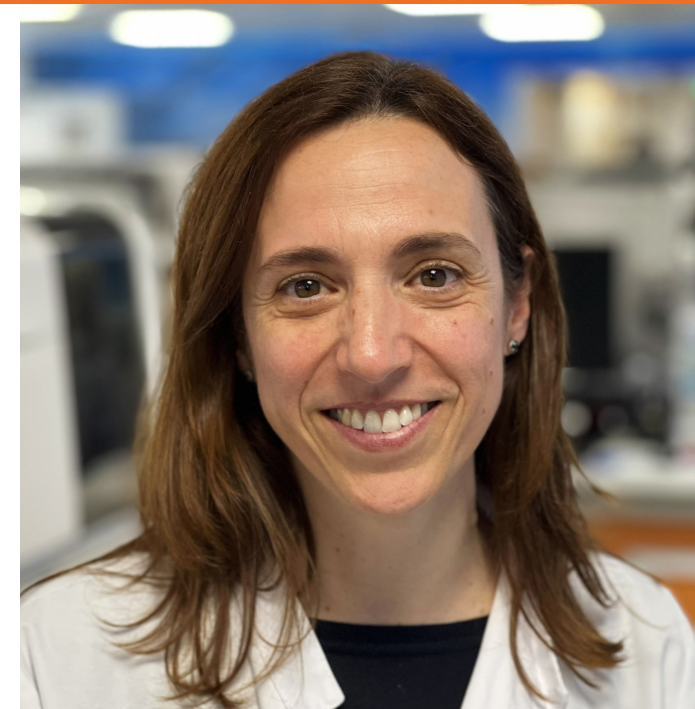
Atellica Solution's advanced STAT priority capabilities played a critical role in helping Hospital Clínic Barcelona respond to the COVID-19 crisis. Originally handling 20% STAT samples, the system rapidly scaled to manage up to 80% STATs per day. These innovations enabled the lab to adapt quickly to external demands and challenges, ensuring timely, high-priority care when it was needed most.

During a March 2023 ransomware cyberattack at Hospital Clínic de Barcelona, Atellica Data Manager was able to quickly be restored, enabling partial automation and helped stabilize lab operations. In Phase 0, the lab experienced complete system outages. However, in Phase 1, the return of Atellica Data Manager functionality enabled internal analyzer coordination—even without HIS-LIS

connectivity—allowing the lab to sustain an average of 500 order requests per day. By Phase 2, as Atellica Data Manager, HIS, and LIS became partially operational (though still partially disconnected), test volume rose to 800 requests per day—a 60% increase.

*Supported workflows helped reduce the turnaround time to five hours and enabled up to **200 extractions daily**, highlighting the system's ability to maintain continuity and efficiency in crisis conditions.*

These capabilities also helped the lab respond effectively to rapidly changing demands during both the pandemic and the cyberattack³.



“Siemens Healthineers supported us, enabling lab operations without the LIS. Atellica Data Manager helped transition us from paper notes to managing orders electronically. A game changer for us during very difficult times.”

– Dr. N. Rico

3. CONTINGENCY PROTOCOL FOR A CYBERATTACK IN THE SCHEDULED ACTIVITY AREA OF A HIGHLY AUTOMATED LABORATORY: EXPERIENCE OF A TERTIARY HOSPITAL. N. Rico Santan¹, M.C. Salgado Martín¹, A. Fabregat Bolufer¹, G. Verdú¹, E. Martínez¹, E. Albesa Méndez¹, A. Prado Rueda¹, R.M. Fernández Bonifacio





*The outcome is clear: faster and more consistent turnaround times, enabling less patient waiting time, fewer re-samplings, and the ability to **attend to more patients with the same resources**. These improvements can lead to better clinical outcomes, enhanced patient care, and high-performing staff.*

Lifting the burden. Empowering the team.

The Atellica Portfolio of systems and informatics solutions helps free lab staff from manual tasks, letting them focus less on screens and more on collaborating and problem-solving with colleagues. This human-centered design enhances teamwork and drives better results. Hospital Clínic Barcelona has made significant ergonomic and environmental enhancements to improve the working conditions for lab technicians. By implementing a compact layout, the lab has increased available space by 15%. Noise levels have been reduced by 30%, creating a

quieter and more pleasant work environment. Additionally, walking distances for pre- and post-track technicians have decreased by up to 61%, reducing physical strain and improving efficiency.

Walkways have been widened, and analyzer interaction has been simplified through the implementation of three Atellica Solution lines, featuring a total of 10 analyzers. By optimizing the positioning of analyzers closer to working areas, physical strain has been minimized and overlap between staff from different areas has been reduced.

 **Available
15% space** 

 **Noise
30% levels** 

 **Walking
61% distance** 



“Our staff highlighted that after the latest changes they accomplish their workload faster, more conveniently and more efficiently.”

– Dr. J.L. Bedini

To enhance monitoring capabilities, the Atellica Solution includes color-coded visual indicators, and the new track system has integrated similar indicators in some modules. Two TV monitors and two tablets have been added to provide real-time visual indicators and access to track and analyzer status. The input and output module offers complete customization tailored to users’ needs, empowering teams to adjust workflows in real time without relying on technical support. This flexibility drives greater efficiency and creates a more ergonomic, user-friendly lab environment.

Hospital Clínic Barcelona makes a conscious effort to acquire furniture and fixtures made from recycled materials. Energy-saving lighting and HVAC systems further minimize the lab’s environmental footprint. The transformation also includes biophilic design elements, such as plants, natural light, and soft colors—creating a calming atmosphere that helps lab technicians feel more relaxed and focused and improving their mood and productivity. In addition to the ergonomic improvements to the Atellica Solutions and the FlexLab X, adjustable desks, anti-fatigue mats, and ergonomic chairs help reduce physical strain and the risk of work-related injuries, allowing technicians to work more comfortably and efficiently.



Conclusion

Hospital Clínic Barcelona stands as a powerful example of how visionary leadership, combined with thoughtfully engineered systems from Siemens Healthineers, can transform laboratory operations without disruption. With a human-centered approach and strategic planning, the lab increased test volume by 30% without adding staff, cut turnaround times by up to 50 minutes, and saved more than 10 million sample tubes—achieving significant improvements in efficiency, sustainability, and patient care.

By leveraging advanced automation, enterprise intelligence, and an adaptable infrastructure, the lab not only eased the burden on its staff, but also enabled the lab to maintain operational continuity during major crises such as the COVID-19 pandemic. This demonstrates that, with the right partner, labs can lead with innovation, work smarter and faster, and face the future of diagnostics with confidence.



At Siemens Healthineers, we pioneer breakthroughs in healthcare. For everyone. Everywhere. Sustainably. As a leader in medical technology, we want to advance a world in which breakthroughs in healthcare create new possibilities with a minimal impact on our planet. By consistently bringing innovations to the market, we enable healthcare professionals to innovate personalized care, achieve operational excellence, and transform the system of care.

Our portfolio, spanning in vitro and in vivo diagnostics to image-guided therapy and cancer care, is crucial for clinical decision-making and treatment pathways. With the unique combination of our strengths in patient twinning,* precision therapy, as well as digital, data, and artificial intelligence (AI), we are well positioned to take on the greatest challenges in healthcare. We will continue to build on these strengths to help overcome the world's most threatening diseases, enable efficient operations, and expand access to care.

We are a team of more than 72,000 Healthineers in over 70 countries passionately pushing the boundaries of what is possible in healthcare to help improve the lives of people around the world.

**Personalization of diagnosis, therapy selection and monitoring, aftercare, and managing health.*

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The statements by customers of Siemens Healthineers described herein are based on results that were achieved in the customer's unique setting. Because there is no "typical" hospital or laboratory and many variables exist (e.g., hospital size, samples mix, case mix, level of IT and/or automation adoption) there can be no guarantee that other customers will achieve the same results.

The products mentioned herein are not commercially available in all countries.

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